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Pam Factor-Litvak, PhD; Gunnar Hasselgren, DDS, PhD; Diane Jacobs, PhD4 ; Melissa Begg, PhD; Jennie Kline, PhD; Jamie Geier, MPH ; Nancy Mervish, MPH ; Sonia Schoenholtz, MPH ; Joseph Graziano, PhD

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Pam Factor-Litvak, PhD[1,2] ; Gunnar Hasselgren, DDS, PhD[3] ; Diane Jacobs, PhD[4] ; Melissa Begg, PhD[5] ; Jennie Kline, PhD[1,4,6] ;Jamie Geier, MPH[1] ; Nancy Mervish, MPH[1] ; Sonia Schoenholtz, MPH[1] ; Joseph Graziano, PhD[2]

[1] Department of Epidemiology, Joseph Mailman School of Public Health, Columbia University

[2] Department of Environmental Health Sciences, Joseph Mailman School of Public Health

[3] School of Dental and Oral Surgery, Columbia University

[4] Sergievsky Center, Columbia University

[5] Department of Biostatistics, Joseph Mailman School of Public Health

[6] Epidemiology of Developmental Brain Disorders Department, New York State Psychiatric Institute

Reprint Requests: Pam Factor-Litvak, PhD

Department of Epidemiology

Joseph Mailman School of Public Health Columbia University

622 West 168 Street PH18-107

New York, New York 10032

(212) 305-7851 (voice)

(212) 305-9413 (FAX)

prf1@columbia.edu

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Running Head: Mercury and Neuropsychological Function

Key Words: Mercury exposure, dental amalgams, neuropsychological function, cognition, memory, attention

Abbreviations:

Hg	Mercury
UHg	Urinary mercury concentration
ICC	Intraclass correlation coefficient
SRT	Selective Reminding Test
BVRT	Benton Visual Retention Test
WAIS	Wechsler Adult Intelligence Scales
NHANES	National Health and Examination Survey

Abstract:

There is widespread concern regarding the safety of silver-mercury amalgam dental restorations, yet little evidence to support their harm or safety. We examined whether or not mercury dental amalgams are adversely associated with cognitive functioning in a cross-sectional sample of healthy working adults. We studied 550 adults, aged 30-49, who were not occupationally exposed to mercury. Participants were representative of employees at a major urban medical center. Each participant underwent a neuropsychological test battery, a structured questionnaire, a modified dental examination and collection of blood and urine samples. Mercury exposure was assessed using: a) urinary mercury concentration; b) the total number of amalgam surfaces; and c) the number of occlusal amalgam surfaces. Linear regression analysis was used to estimate associations between each marker of mercury exposure and each neuropsychological test, adjusting for potential confounding variables. Exposure levels were relatively low. The mean urinary mercury concentration (UHg) was 1.7 g/g creatinine (range 0.09 to 17.8); the mean total number of amalgam surfaces was 10.6 (range 0-46) and the mean number of occlusal amalgam surfaces was 6.1 (0-19). No measure of exposure was significantly associated with the scores on any neuropsychological test in analyses that adjusted for the sampling design and other covariates. In a sample of healthy working adults, mercury exposure derived from dental amalgam restorations was not associated with any detectable deficits in cognitive or fine motor functioning.